

selves, and are most conspicuous, often possessing a highly-characteristic warning pattern. They adopt special warning attitudes, and do not run away when they are attacked (see p. 510).

These two families may be perhaps compared to the powerful group of the hawks, which are mimicked by the feeble cuckoos, and yet, when attacked, are themselves swift in flight, but can render a good account of themselves when active defence becomes necessary.

23. EXPERIMENTAL EVIDENCE OF THE VALUE OF THE TERRIFYING MARKINGS IN *Chærocampa* LARVÆ.
(G. A. K. M.)

Salisbury, April 16, 1899.—I offered baboons a full-grown larva (about seven inches long) of *Chærocampa osiris*. The larva is remarkably snake-like, the general colouring somewhat recalling that of the common puff-adder (*Bitis arietans*). The female baboon ran forward expecting a tit-bit, but when she saw what I had brought she flicked it out of my hand on to the ground, at the same time jumping back suspiciously; she then approached it very cautiously, and after peering carefully at it from the distance of about a foot, she withdrew in alarm, being clearly much impressed by the large blue eye-like markings. The male baboon, which has a much more nervous temperament, had meanwhile remained at a distance surveying the proceedings, so I picked up the caterpillar and brought it towards them, but they would not let me approach, and kept running away round and round their pole, so I threw the insect at them. Their fright was ludicrous to see; with loud cries they jumped aside and clambered up the pole as fast as they could go, into their box, where they sat peering over the edge watching the uncanny object below. After a while the female seemed inclined to descend to investigate matters again, but owing to the manner in which they had entangled their ropes she could not descend without the male, and he very emphatically refused to move. On concealing the larva I managed to coax them down again, and then seizing the rope to which the male was tied, I drew him slowly towards me holding up the larva in the other hand; he simply screamed in abject terror, so I let him go, and they retired to their box. The whole performance was a most remarkable demonstration of the high value of the terrifying colours in these larvæ.

. . . Their terror of the insect was most amusing, and was an eloquent testimony to the great value of this form of colouring to so bulky a larva. I do not think any one could now argue that the theory of terrifying coloration is far-fetched, as I have heard contended. The snake-like appearance seems capable of deceiving more intelligent animals than baboons, for it is not long since I received a box containing a mutilated specimen of this caterpillar accompanied by a note inquiring, "Is this a snake?"

[This evidence recently obtained by Mr. Marshall, added to that already published by Professor Weismann, Lady Verney, and the present writer ("Colours of Animals," London, 1890, pp. 260, 261), leaves no doubt that the conspicuous eye-spots of *Charocampa* and other large larvæ are really terrifying and do actually alarm their enemies. The results observed are consistent with the production of a feeling of terror rather than of distaste or repugnance such as Porschinski supposes to result from the sight of an ocellated spot. In his remarkable papers on "Coloration marquante et Taches ocellées" (St. Petersburg), this acute and imaginative naturalist states his belief that ocellated spots represent the appearance of a drop of warning liquid. He develops this hypothesis with the greatest ingenuity, and describes and illustrates a large number of such spots in insects of many kinds. In some ocellated spots he sees represented the reflection of the sky in a drop of warning liquid; in others, the distorting effect of gravity upon a drop resting on a vertical surface: in the sounds made by certain irritated Mantides, as they display the spots on their raptorial legs, he believes he hears a representation of the rushing sound of a warning liquid forced through a fine aperture. My kind friend Professor W. R. Mottill has given me the opportunity of learning the remarkable and highly-imaginative views of the distinguished Russian naturalist. On some future occasion I hope to be able to lay them before English-speaking naturalists in much greater detail. For the present I desire to point out that the results obtained by experiment do not support his conclusions, but suggest in the most convincing manner that terror, such as is caused by the appearance of a serpent, is produced by the display of eye-like marks on a large caterpillar. Terror may be similarly caused by the display of large ocellated spots on the wings of imagines, while in other

cases they probably act as directive marks, diverting the attention of an enemy from the body of the insect (see pp. 371-5 and 440-1). To the former category probably belong the remarkable eye-like spots on the tegmina of certain Harpagid Mantides; for Mr. Marshall writes (1902) of a South African species: "The eye-like markings on the wings of the Mantis, *Pseudocercobotra wahlbergi*, are, I think, almost certainly of a terrifying character. When the insect is irritated the wings are raised over its back in such a manner that the tegmina stand side by side, and the markings on them then present a very striking resemblance to the great yellow eyes of a bird of prey, or some feline animal, which might well deter an insectivorous enemy. It is noticeable that the insect is always careful to keep the wings directed towards the point of attack, and this is often done without altering the position of the body."—E. B. P.]

24. EVIDENCE OF A SUPERSTITIOUS DREAD OF THE LARVA OF *Chorocampa elpenor*. (E. B. P.)

Professor Weismann and Lady Verney have shown that the larva of *C. elpenor* terrifies birds, and I have found that *Lacerta viridis* was at first much intimidated, but finally overcame its fright and devoured the larva. An account of these observations is given in "Colours of Animals," Poulton, 1890, pp. 260, 261. I have recently ascertained that the larva is regarded with superstitious fear in certain parts of Ireland. This I owe to the kindness of my friend Mrs. Nuttall, the American anthropologist, who has drawn my attention to an article by Mrs. Frances J. Battersby, of Cromlyn, Westmeath, in "Knowledge," vol. 21, 1898, p. 256, and reprinted in "Public Opinion," Nov. 11, 1898, p. 622. The writer quotes the following quaint and amusing account of the larva, and the sympathetic magic by which its supposed evil influence is cured, from "A Chorographical Description of the County Westmeath," by Sir Henry Piers, of Insternaght (1682): "We have a certain reptile found in our bogs called by the Irish the 'Connagh worm.' This is an ugly worm, sometimes as thick as a man's thumb, about two or three inches long, having, as all reptiles have, many short feet, a large head, great goggle eyes and glaring, between which riseth or jutteth forth one thick bristle, in shape like a horn, which